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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,843	02/24/2005	Minehisa Imazato	112857-389	7734

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EXAMINER	
ENIN-OKUT, EDUE	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
10/02/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

chicago.patents@klgates.com

Office Action Summary	Application No.	Applicant(s)	
	10/509,843	IMAZATO ET AL.	
	Examiner	Art Unit	
	Edu E. Enin-Okut	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *47-92* is/are pending in the application.

4a) Of the above claim(s) *52,56,57,61-77 and 79* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *47-51,53-55,58-60,78 and 80-92* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

WATER DISPOSAL SYSTEM, METHOD OF DISPOSING WATER, AND POWER GENERATION APPARATUS

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 14, 2009 has been entered. Applicant has amended claims 47, 55, 58, 78, 80 and 82. Currently, claims 47-51, 53, 54, 55, 58, 59, 60, 78 and 80-92 are pending.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 47-51, 53, 54, 55, 58, 59 and 60 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 47-51, 53, 54, 55, 58, 59 and 60, claims 47 and 58 recite "... and wherein an exposed surface area of the water-absorbing member is larger than a surface of the power generator." Portion of the specification (cited by applicant as support for this portion of the amendments made to

claims 47 and 58) does not appear to provide support for the claim recitation described above. (Applicant is also directed to the discussion presented in Paragraph 14 below.)

5. The rejection of claims 55 and 82 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is withdrawn because claims 55 and 82 were amended.

6. Claims 47-51, 53, 54, 55, 58, 59, 60, 78 and 80-92 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 47-51, 53, 54, 55, 58, 59, 60, 78 and 80-92, claims 47, the recitations made in claims 47, 58 and 78 include the term "substantially". The use of the term "substantially" renders the claims indefinite because the quantity or extent of the terms "substantially" is used to modify cannot be ascertained.

Regarding claims 80-86, claims 80 and 83 recite the limitation "... according to claim 79, ...". There is insufficient antecedent basis for this limitation in the claim (i.e., claim 79 has been cancelled). (*Examiner's Note:* For purposes of examination, it is assumed that this phrase recites "... according to claim 78, ...".)

Claim Rejections - 35 USC § 103

7. The rejection of claims 47-51, 53, 58 and 59 under 35 U.S.C. 103(a) as being unpatentable over Sakakibara et al. (JP 02-168565; refer to translation) in view of Streckert et al. (US 6,447,945) is withdrawn because claims 47 and 58 were amended.

The rejections of claim 54, 55 and 60 under 35 U.S.C. 103(a) as being unpatentable over Sakakibara and Streckert, in view of Chizawa et al. (US 6,613,467) and Imahashi et al. (US 5,350,643), are withdrawn because claims 47 and 58 were amended.

8. The rejection of claims 78, 80, 81, 83, 84 and 88-92 under 35 U.S.C. 103(a) as being unpatentable over Sakakibara et al. (JP 02-168565; refer to translation) in view of Streckert et al. (US 6,447,945) is maintained. (The rejection of claim 79 under 35 U.S.C. 103(a) as being unpatentable over Sakakibara et al. in view of Streckert et al. is withdrawn because claim 79 was cancelled.)

Regarding claim 78, if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction (e.g., *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997)). See MPEP 2111.02 (II).

Sakakibara also teaches a power generation apparatus for generating electric power [fuel cell] by supplying a fuel gas and an oxidizer gas such that the fuel gas and the oxidizer gas can electrochemically react with each other (claim 1), comprising:

- a power generator [fuel cell] having a predetermined electrolyte film [3] provided between a first electrode [1] and a second electrode [2] (Figs. 2(A), 2(B); p. 9, para. 5);
- a separator [10] having, formed thereon, a fuel supply groove [11] for supplying the fuel gas to the first electrode and an oxidizer supply groove [12] for supplying the oxidizer gas to the second electrode, and for holding the power generator (p. 9, para. 5); and,

- a water-absorbing member [13] for absorbing water generated during power generation by the power generator, provided at least on a midway portion of the oxidizer supply groove (Fig. 2(B); p. 6, para. 2; p. 7, para. 5 – p. 8, para. 1).

However, Sakakibara does not expressly teach that the water-absorbing member is provided on a surface of an electronic device to which the power generator is mounted, as being extended from the surface.

Streckert teaches a portable electronic device powered by fuel cells which include arrangements for effectively and efficiently removing water generated at such fuel cells from the interior of a case, such as a case which holds the commonly used laptop personal computers (Abstract; 1:40-44). The water transportation system 41, located in the lid of a laptop case as shown in Figs. 3, 8 and 9, employs a wick arrangement with a wick 43 (a braided or otherwise accumulated group of strands of polypropylene fiber or some other hydrophilic polymeric fiber) located adjacent the air outlet passages from the fuel cell unit 33, along a perimeter boundary of that section of the PC case containing the fuel cell unit (e.g. along one or both side edges of the lid) (Figs. 3, 8; 4:22-40). The wick 43 is disposed in a porous tube 45 that is positioned inside a generally coaxial porous outer tubular holder 47; thus, the wick is always exposed to the ambient environment, thus promoting evaporation at its surface (Figs. 4, 5; 4:41-54). (One would readily appreciate that, because the water transportation system of Streckert has a given thickness (or height), it "extends" away from the surface of the device when placed upon that surface.)

It would have been obvious to one of ordinary skill in the art at the time of the invention to dispose a water-absorbing layer of Sakakibara on a surface of an electronic device, and extending therefrom, because Streckert teaches that the layer, positioned as described above, can remove water generated by fuel cell operation from the interior of the device.

Regarding claim 80, Sakakibara teaches that the water-absorbing member [13] is further provided along at least a partial region of a sidewall [B] of the oxidizer supply groove [11] (Fig. 1(B); p. 7, para. 5 – p. 8, para. 1).

Regarding claim 81, Sakakibara teaches that the water-absorbing member [13] is provided so as to cover at least a part of the surface having the oxidizer supply groove formed therein (Figs. 1(B), 2(A), 2(B); p. 7, para. 5 – p. 8, para. 1).

Regarding claim 83, Sakakibara teaches that water-absorbing member [13] includes a member absorbing the water by utilizing capillary phenomenon (p. 6, para. 2).

Regarding claim 84, Sakakibara teaches that the water-absorbing member [13] is an aggregate of string-formed fiber having a void portion formed therein in a longitudinal direction (p. 8, para. 2).

Regarding claim 88, Sakakibara teaches that the water-absorbing member includes the oxidizer supply groove having a high water-repellent region formed therein (p. 4, para. 2).

Regarding claim 89, Sakakibara teaches that the water-absorbing member includes the oxidizer supply groove having a high hydrophilic region formed therein (p. 6, para. 2).

Regarding claim 90, Sakakibara teaches that its fuel cell includes an air electrode, as discussed above. Sakakibara does not expressly teach that the fuel gas includes a hydrogen gas.

However, Streckert also teaches that the fuel cell incorporated into a portable electronic device is designed to operate by the reaction of hydrogen and air (Abstract). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use hydrogen as fuel for the power generation apparatus of Sakakibara because it is well-known in the art that a fuel cell can operate via reaction of this fuel with air.

Regarding claim 91, Sakakibara teaches that a power generation section having a stacked structure in which a plurality of elements holding the power generator by the separator is stacked (Figs. 2(A), 2(B); p. 9, para. 5).

Regarding claim 92, the limitations recited in this claim have been addressed above with respect to claim 49.

9. Claim 85 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara and Streckert as applied to claims 78, 80, 81, 83, 84 and 88-92 above, and further in view of Chizawa et al. (US 6,613,467) is maintained.

Sakakibara and Streckert are applied and incorporated herein for the reasons above.

Regarding claim 85 and 86, Sakakibara teaches the water absorbing member includes a material that absorbs water by using capillary phenomenon, as discussed above.

However, Sakakibara and Streckert do not expressly teach that the water-absorbing member comprises a three-layered structure in which a two-layered structure including a first material having a water-absorbing/releasing property and a second material having a water absorbency bonded with each other is further bonded with a predetermined tape material on the lower side of the second material.

Chizawa teaches a fuel cell system that using a temperature/humidity exchange portion 10, with a water retentive porous body 14, is disposed to contact a fuel cell stack 9, as shown in Figs. 2A, 2B (8:29-31, 8:49-55, 9:8-15). The porous water retentive porous body 14, which is required to be able to hold water and allow this water to evaporate upon a change of osmotic pressure, can be formed of a composite film composed of a fluorinated porous film laminated with a fibrous polymer material (9:5-15). The porous body is attached to a grooved, carbon separator plate through a sealing material 8 (8:56-65; Figs. 2A, 3A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a layered structure as the water absorbing member in the power generator of Sakakibara, as taught by Chizawa, to further control the structure of the water absorbing member in efforts to ensure that absorbed water from fuel cell operations is effectively moved out of the cell.

10. Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara and Streckert as applied to claims 78, 80, 81, 83, 84 and 88-92 above, and further in view of Nishida et al. (US 6,660,419).

Sakakibara and Streckert are applied and incorporated herein for the reasons below.

Regarding claim 87, Sakakibara and Streckert do not expressly teach that the oxidizer supply groove has a roughened surface.

Nishida teaches the performance of a fuel cell can be improved by roughening the surface of separator grooves for gas flow because contact resistance is reduced (14:24-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention to roughen the surface of the oxidizer supply groove in the power generating apparatus of Sakakibara, as modified by Streckert, because Nishida teaches this roughening can improve the performance of the apparatus.

Response to Arguments

11. Applicant's arguments filed August 14, 2009 have been fully considered but they are not persuasive.

12. It is noted that applicant has consistently made reference to portions of a specification that was superseded by preliminary amendments filed on October 1, 2004. The examiner has attempted to locate portions of the specification now pending in the instant application that correspond to those cited by applicant.

13. As to applicant's arguments with respect to the Sakakibara reference individually (see p. 13 of its remarks), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

14. As to applicant's arguments with respect to the Streckert reference and the recitation "... and is substantially coplanar with an external major surface of an electronic device ..." as presented in amended claims 47 and 58, "... and wherein an exposed surface area of the water-absorbing member is larger than a surface of the power generator ..." as presented in amended claims 47, 58 and 78, (see p. 13 of its remarks), it should be noted that applicant makes reference to p. 22, lines 24-29 of the previous specification. This portion of that specification does not appear to be relevant to the matter being discussed here.

Assuming that the corresponding portion of the instant specification is to be found on p. 76, lines 12-18, first, it noted that this portion of the specification states the following:

> "... the water-absorbing member 18 moves the absorbed water to the surface of an electronic device, which is larger than the surface of the power generator 10, and allows it to evaporate. As is known from the above, the power generation apparatus 20 makes it possible to cause an efficient evaporation by disposing the water-absorbing member 18 on the electronic device having a larger area, and makes it possible to allow the water-absorbing member 18 to constantly evaporate the water every time the water is absorbed and moved."

It appears that the "surface of the electronic device" described above is that which is larger than the "surface of the power generator", not the "water absorbing member" itself. Further, upon review of the instant specification (and exemplary embodiments described therein) in light of amendments made to the claims, the location of the water-absorbing member with respect to the fuel cell, and the location of the fuel cell with respect to the electronic device, is not clearly described. Thus, the relative dimensions of these components, with respect to each other, cannot be ascertained.

15. As to the remainder of applicant's arguments, they have been considered but applicant has amended the claims such that new grounds of rejection were necessitated.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday to Thursday, 7 a.m. - 3 p.m. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dai-Weh Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/
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